What's Not to Like

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Ten things I don't like about you (. . . until tomorrow)

1 Introduction

It is well known that the interpretation of sentences in which negation appears above certain verbs like 'think' and 'want' is typically stronger than expected. When negated, these predicates generally license an inference not just that the individual in question fails to have a positive attitude towards the content in question, but also that they have the corresponding negative attitude towards the content (Horn 1978 among many others). For instance, a sentence like (1-a) is generally interpreted in the same way as (1-b):

(1) a. James doesn't think that Marie will be hired.

b. ⇝ James thinks that Marie will not be hired.

The traditional name for this phenomenon is 'neg-raising'.[1] Neg-raising readings are generally the most prominent, but not the only, reading available; thus e.g. (1-a) could be followed up with 'He doesn't think think that she will not be hired either; he just doesn't know whether she will be', in which case (1-a) will clearly not be interpreted in the same way as (1-b). If we combine a standard Hintikkan semantics for neg-raising predicates like 'think' with a classical treatment of negation, we predict that a sentence like (1-a) will only

1 'Neg-raising' as a name suggests a syntactic analysis, but we will follow the recent literature in using this as a name for the phenomenon without suggesting a particular analysis of it. Strong NPI licensing is sometimes treated as definitive of neg-raising, but we will assume the more traditional and simpler definition: neg-raising is simply the phenomenon of certain predicates licensing unexpectedly strong inferences when negated: 'the collapsing (*Zusammenfall*) of the distinction between contrary and contradictory readings of negation' (Horn 1989). Some in the recent literature have defined neg-raising more specifically as instances in which certain predicates 'when negated. . . are preferentially − but not necessarily − interpreted as having semantic scope over negation' (Homer 2015). This definition in general aligns with the one above, but it is too narrow for our purposes, since the cases we will put forward are precisely ones in which the stronger inference obtained is not equivalent to one in which negation takes low scope. But definitions like Homer's are, we think, already more restrictive than would be accepted on reflection by most in this literature, which recognizes that attitude predicates under negative quantifiers (like 'few' or 'none') give rise to neg-raising readings (Gajewski 2007, Romoli 2013 among others; see also section 6 below). Adopting a relatively broad definition of the phenomenon in question makes it possible to investigate, as we will do here, whether this phenomenon constitutes a theoretically natural class without prejudging the question of whether neg-raised attitude verbs can always be paraphrased with a low scope negation, and whether they always license strong NPIs.

have an agnostic reading, and do not account for its stronger neg-raising reading (on which it licenses the inference to (1-b)). Accounting for neg-raising is an enduring challenge at the intersection of semantics, syntax, and pragmatics.

As is well-known, neg-raising is not possible with all attitude predicates. For instance, 'is certain' interacts with negation in the way we would expect from a classical point of view: (2-a) has only an agnostic reading, *not* a neg-raising reading (which would license the inference to (2-b)).

(2) a. James is not certain that Marie will be hired.

b. $\not\rightarrow$James is certain that Marie will not be hired.

Another crucial feature of neg-raising predicates is that, when negated, they generally license strong Negative Polarity Items (NPIs), like 'until tomorrow' or 'in years'. By contrast, non-neg-raising predicates do not license strong NPIs (Lakoff 1969 among others):

(3) a. James doesn't think that Marie will arrive until tomorrow.

b. *James isn't certain that Marie will arrive until tomorrow.

Traditional theories of strong NPIs and neg-raising are formulated to predict a tight connection between the two phenomenon. In particular, most approaches predict that neg-raised predicates always license strong NPIs.

More recently, however, Gajewski (2011) and Chierchia (2013) have proposed a theory of strong NPIs on which, at least in principle, they may fail to be licensed by neg-raising constructions. The gist of the idea is that strong NPIs, like all NPIs, are licensed only in downward monotonic environments. However, the former, unlike the latter, are sensitive to non-truth-conditional meanings. That is, they require that monotonicity properties are calculated taking into account not only at-issue content, but also presuppositions and scalar implicatures. Going back to the contrast in (3), the reason why (3-a) but not (3-b) licenses

strong NPIs is because the latter gives rise to a positive implicature (viz. that John leaves it open that Marie will arrive . . .) which disrupts the downward monotonicity of the context in which 'until tomorrow' appears. This means that in this theory the alignment between neg-raised predicates and strong NPI licensing is only indirect: the former generally license the latter because, unlike the latter, they do not give rise to non-truth conditional meanings which disrupt monotonicity. But nothing in this approach excludes the possibility of there being a predicate which is neg-raising but gives rise to a presupposition or implicature which disrupts strong NPI licensing. In fact, given that non-truth conditional meanings are pervasive in natural language, one might indeed expect there to be such a class of predicates on this approach.

In this squib, we show that there is indeed a class of predicates which give rise to neg-raising inferences but do not license strong NPIs: namely, factive emotives like 'appreciate', 'be glad', 'be happy', and 'like'. This is a striking fact which we believe provides support for the Gajewski-Chierchia theory. We also point to some challenges this class of predicates poses for traditional approaches to neg-raising, and make a suggestion about how these might be overcome in a semantic approach to neg-raising.[2]

2 Gajewski and Chierchia on strong NPIs

We begin by briefly rehearsing Gajewski (2011), Chierchia (2013)'s theory of strong NPIs, which is based on the idea that strong NPIs are sensitive to non-truth conditional meanings. In brief, the idea is that both weak and strong NPIs require downward entailing environments; but that while we can ignore presuppositions and implicatures in calculating monotonicity properties relevant for the licensing of weak NPIs, we cannot do so when calculating

2 Kiparsky & Kiparsky (1971: p.19) claim that neg-raising and factivity are incompatible. But they do so because they assume a syntactic approach to neg-raising—which, as we discuss below, is indeed incompatible with treating 'like'-verbs as neg-raisers. We think it is, however, fruitful to at least explore the possibility that appearances here are not misleading, and that 'like'-verbs are indeed neg-raisers, and should be treated in a unifed way with other neg-raisers. Thanks to an anonymous reviewer for discussion on this point.

monotonicity properties relevant to the licensing of strong NPIs. To illustrate, consider the contrast between (4) and (5), which shows that a strong NPI like 'until tomorrow' can appear in the scope of negation like in (4), but cannot appear felicitously in downward entailing contexts like the restrictor of a universal quantifier in (5).

(4) Mary won't leave **until tomorrow**.

(5) *Every student who will leave **until tomorrow** will miss the class.

The relevant difference between (4) and (5) is that the latter has a presupposition that the intersection of the domain of quantification and the restrictor clause is non-empty; and that if this presupposition is taken into account in calculating monotonicity properties, the restrictor of the quantifier in (5) is no longer downward entailing. Schematically, the two components of the meaning of (5) are in (6-a) and (6-b):

(6) a. **presupposition**: $\exists x \in \mathrm{D}[[\![\textsf{will leave until tomorrow}]\!](x)]$

b. **assertion**: $\forall x \in \mathrm{D}[[\![\textsf{will leave until tomorrow}]\!](x) \rightarrow [\![\textsf{will miss the class}]\!](x)]$

Gajewski (2011) and Chierchia (2013) argue that in evaluating monotonicity for the purpose of licensing strong NPIs, we must look at implicated and presupposed content in addition to asserted content. And, crucially, if we do this in calculating the monotonicity of the restrictor of 'every', we do not have a downward entailing environment: ⌜Something is p and everything which is p is q⌝ does not entail ⌜Something is (p and r) and everything which is (p and r) is q⌝.

3 Neg-raising and strong NPIs

Let us turn now to neg-raising. Consider again the contrast in (3), repeated here:

(3) a. James doesn't think that Marie will arrive until tomorrow.

b. *James isn't certain that Marie will arrive until tomorrow.

Given Gajewski-Chierchia's approach, what explains the fact that strong NPIs are licensed in the scope of the attitude predicate in (3-a) but not in (3-b) is a difference between them in their scalar implicatures or presuppositions. Notice that a sentence like (7-a) generally gives rise to the implicature in (7-b), while (8-a) does not, and instead gives rise to the neg-raising inference in (8-c) (cf. Romoli 2013).

(7) a. John isn't certain that Mary was here.

b. $\rightsquigarrow$ John leaves open that Mary was here.

(8) a. John doesn't think that Mary was here.

b. $\not\rightsquigarrow$ John leaves open that Mary was here.

c. $\rightsquigarrow$ John doesn't leave open that Mary was here.

In Gajewski-Chierchia's theory, the question of whether strong NPIs are licensed in the scope of the attitude predicates in (7) and (8) is the question of whether those attitude predicates, together with their scalar implicatures and presuppositions, create downward entailing environments. It is easy to see that the possibility inference of 'certain' disrupts the downward entailingness of its scope. Abstractly, in the case of 'not certain' we have an environment like $\ulcorner \neg \Box_j [\_\_] \wedge \Diamond_j [\_\_] \urcorner$, whereas in the case of 'doesn't think' we have instead an environment like $\ulcorner \neg \Box_j [\_\_] \urcorner$. For essentially the same reason as in the case of 'every' above, __ is not a downward entailing environment in the former, whereas it obviously is in the latter.

Note that in this system, strong NPI licensing does not follow directly from the fact that a predicate has a neg-raising inference. The connection is rather more general and more indirect: in particular, while the neg-raising inference of neg-raising predicates leaves the downward entailingness of the environment intact, the existential inference typical of

non-neg-raising predicates disrupts it, so that only the former license strong NPIs in their complements.

4 'Like'-verbs

Abstractly speaking, however, nothing in the Gajewski-Chierchia approach excludes the existence of a neg-raising predicate which doesn't license strong NPIs. In this section, we'll argue that some emotive factives have just this behavior. In particular, consider predicates like 'like', 'be glad', 'be happy', 'appreciate', and so on, with propositional complements. Unlike most factive attitude predicates, these are neg-raising predicates in the sense that the typical interpretation of a sentence like (9-a) is *not* one on which Fred is indifferent about Marie being hired, but rather one on which Fred is unhappy about Marie being hired:[3]

(9) Fred {doesn't like/doesn't appreciate/isn't happy/isn't glad} that Marie was hired.

Just as for other neg-raising predicates, an indifference reading of (9) is possible; it can be brought out by following up (9) with something like 'He doesn't dislike that she was hired yesterday either; he is indifferent about it'. But this reading is certainly not the most prominent interpretation: on the most natural interpretation, (9) is rather felt to express that Fred dislikes that Marie was hired.

Crucially, however, these predicates do not license strong NPIs when negated, unlike the standard neg-raising predicates discussed above, as witnessed by the contrast between (10-a) versus (10-b) and (10-c):[4]

(10) a. *Fred doesn't like that Marie has seen her mother in years.

b. Fred likes that Marie hasn't seen her mother in years.

3 This observation is due to Horn 1989: p. 341: "I don't like it that he was reelected' can convey (by litotes) a strong negative reaction to his re-election (= I dislike it...), but it cannot convey satisfaction with his defeat.' We do not know of subsequent discussion of this point or its bearing on the debate about neg-raising.

4 Thanks to Chris Collins and Paul Postal (p.c.) for first bringing this point to our attention.

c. Fred doesn't think that Marie has seen her mother in years.

At first glance, then, our class of emotive factives—call them *'like'-verbs* as a shorthand—seem to witness exactly the theoretical possibility that Gajewski-Chierchia's account makes available: namely, neg-raising predicates which do not license strong NPIs.

5 Motivating the inference

Before exploring Gajewski-Chierchia's predictions about our data in more detail, we will do more to motivate treating 'like'-verbs as neg-raisers. First, we argued above that, intuitively, (11-a) is generally interpreted as (11-b):

(11) a. Fred doesn't like that Marie was hired yesterday.

b. Fred dislikes that Marie was hired yesterday.

However, given that the claim in (11-b) is stronger than the literal meaning in (11-a), the latter is always compatible with a situation in which the former is true, so we have to be cautious before concluding that the reading in (11-b) is really there (see Gajewski 2005, Meyer & Sauerland 2009 for related discussion). The licensing of strong NPIs is often used as a diagnostic reinforcing the existence of neg-raising. However in this case obviously we cannot use that diagnostic, since we are precisely calling into question whether neg-raising predicates always license strong NPIs.

While we think that the inference from (11-a) to (11-b) is intuitively clear, we will put forward one further argument that this inference is robust, building on Chierchia et al. 2012. Consider a sentence like (12), which embeds (11-a) in the first disjunct.

(12) Either Fred doesn't like that Marie was hired yesterday or he doesn't care.

If the first disjunct had only a weak indifference reading, then the second disjunct here would entail the first. If the second disjunct entailed the first, however, then we would expect

(12) to be a violation of Hurford's constraint (Hurford 1974), and to strike us as being as infelicitous as (13):

(13) #Either John is in France or he is in Paris.

The fact that (12) is felicitous thus suggests that (11-a) indeed does have a reading on which it communicates something more than indifference, and instead communicates what (11-b) does. If (11-a) does indeed have such a reading, then this of course accounts for the felicity of (12), since (11-b) neither entails nor is entailed by 'John doesn't care about Marie being hired yesterday'.

6 Universal inferences and partial cyclicity

Even if 'like'-verbs give rise to stronger readings than might be expected, some might still resist counting them as neg-raisers. In particular, those who take the licensing of strong NPIs to be diagnostic of neg-raising could argue that 'like'-verbs are not neg-raisers; as we will see below, anyone who goes in for a syntactic approach to neg-raising must likewise argue that these are not neg-raisers. They might instead point out that when these predicates take nominal complements they give rise to an inference sometimes called 'inferences to the antonym.' That is, a sentence like (14-a) gives rise to the inference in (14-b).

(14) a. John doesn't like apples.

b. $\rightsquigarrow$ John dislikes apples.

There are various accounts of the inference in (14-b), so one might argue that the sentential cases above are not cases of neg-raising after all, and instead should be treated as inferences to the antonym (Krifka 2007; see also Heim 2008, Ruytenbeek et al. 2017)

We do not have a decisive argument against this response. But we think there are reasons to generalize in the other direction: that is, to give a unified account both of neg-raising and of

the phenomenon in (14). Part of the motivation for this is general considerations of theoretical simplicity. Part comes from the fact that, as we will see presently, the Gajewski-Chierchia approach already predicts the lack of strong NPI licensing under negated 'like'-verbs. Here we will make another point, which is that inferences to the antonym share some characteristic patterns with neg-raising. For instance, like neg-raisers, inferences to the antonym give rise to universal inferences under negative quantifiers (as (15)) and (partial) cyclicity (as in (18)), just like the corresponding 'like'-verbs in (16) and (19), respectively, and just like the classical neg-raisers in (17) and (20), respectively.[5]

(15) Nobody likes apples.

(15) $\rightsquigarrow$ Everybody doesn't like apples.

(16) a. Nobody likes that Marie was hired.

b. $\rightsquigarrow$ Everybody dislikes that Marie was hired.

(17) a. Nobody thinks that Marie was hired.

b. $\rightsquigarrow$ Everybody thinks that Marie wasn't hired.

(18) a. I don't think that John likes apples.

b. $\rightsquigarrow$ I think that John dislikes apples.

(19) a. I don't think that John likes that Marie was hired.

b. $\rightsquigarrow$ I think that John dislikes that Marie was hired.

(20) a. I don't think that John thinks that Marie was hired.

b. $\rightsquigarrow$ I think that John thinks that Marie wasn't hired.

These parallelisms are, of course, only suggestive; but they do provide some evidence that

5 See Gajewski 2007, Romoli 2013 among others for discussion of these cases with classical neg-raising predicates. Thanks to an anonymous reviewer for suggesting these data to us.

what we have here is a unified phenomenon. And below we will show how a unified account can in fact be given.

7 Gajewski-Chierchia on 'like'-verbs

We show now that the Gajewski-Chierchia approach to strong NPI licensing in fact precisely predicts that neg-raised 'like'-verbs do not license strong NPIs. The central reason for this is that 'like'-verbs are factive: they presuppose the truth of their complement. For instance (as standard projection tests will confirm), (21) presupposes that Marie was hired.

(21) John likes that Marie was hired.

And this factivity presupposition disrupts the downward monotonicity of the environment in which the strong NPI appears. If we ignore its presupposition, then (22-a) is downward entailing in its scope.[6] But once we take into account the presupposition of 'like' in calculating its monotonicity, as in (22-b), we do not have a downward entailing environment anymore, and strong NPIs are predicted not to be licensed.

(22) a. $\neg \textbf{likes}_f(\_\_)$

b. $\neg \textbf{likes}_f(\_\_) \wedge \_\_$

Putting things more intuitively, 'Fred doesn't like that Marie was hired yesterday' intuitively does not entail 'Fred doesn't like that (Marie was hired yesterday and Jane was hired yesterday)', since the latter presupposes something that the former doesn't, namely that Jane was hired yesterday. So, if we take into account presuppositions in calculating the monotonicity properties relevant to the licensing of strong NPIs, the scope of 'doesn't like'

6 We assume an upward entailing semantics for 'like' which would make its negation downward entailing. See von Fintel 1999 for discussion in particular of the case of 'be glad', which can be extended to 'like', 'appreciate', and their kin. On the other hand, if we adopt a non-upward entailing semantics for this attitude predicates, then this could provide an independent explanation of why their negations will not license strong NPIs, though see Rothschild 2006 and Chemla et al. 2011 for discussion of NPI licensing in non-monotonic contexts.

is not downward entailing. Thus, if we follow Gajewski and Chierchia, we predict that strong NPIs are not licensed in the scope of negated 'like'-verbs. This makes them unlike standard neg-raising predicates like 'think', which are not factive, and thus do not have a presupposition which blocks downward monotonicity in a parallel way.

This is, we think, a striking point in favor of Gajewski-Chierchia's theory. That theory opens up a theoretical possibility (one not to our knowledge heretofore discussed), namely that we could have neg-raising predicates which are do not license strong NPIs, if those neg-raising predicates have presuppositions or implicatures which prevent their scope from being downward entailing. This possibility seems indeed to be realized by 'like'-verbs.

8 Syntactic neg-raising

This is all to the good for Gajewski and Chierchia's theory of strong NPIs. We haven't yet said anything about how to actually account for the neg-raising inferences of negated 'like'-verbs. In the rest of the paper, we will turn to this topic and we will show that while it is not clear how to provide a unified account for the cases above within a syntactic approach to neg-raising, a semantic approach (Gajewski 2007, Romoli 2013), combined with a Gajewksi-Chierchia theory of strong NPIs, can provide such an account.

The syntactic approach to neg-raising originated in Fillmore 1963 and Horn 1971 and was recently taken up and revived by Collins & Postal (2014, 2017). The basic idea is that a sentence like (23-a), on its neg-raising reading, has at some level of syntactic representation a negation actually present in the embedded clause, and that this level of syntactic representation feeds into semantic interpretation. This negation then moves out and appears in the main clause.

(23) a. James doesn't think that Marie will be hired.

b. James NEG thinks that [Marie will ⟨NEG⟩ be hired]

The non-neg-raising readings are those where the negation is interpreted in the same place it appears in surface form. The syntactic approach is generally linked to a theory on which strong NPIs require a local licensor; the silent low negation acts as this licensor for neg-raising readings (Linebarger 1987 among others; see Gajewski 2005, 2007, Romoli 2013 for critical discussion).[7]

This approach cannot be extended to account for the neg-raising behavior of 'like'-verbs. The first problem is that this kind of approach does not, as far as we can tell, have the resources to explain why negated 'like'-verbs do not license strong NPIs. The second problem is much more basic, and is one of truth-conditional adequacy. On this approach, superficially high-negation neg-raising sentences are predicted to be *semantically equivalent* (on their default readings) to their low-negation counterparts. If we were to extend this approach to 'like'-verbs, then a sentence like (24-a) is predicted to have a syntactic level of representation like (24-b) where negation is interpreted in its lower position. Thus (24-a) (on its neg-raising interpretation) and (24-c) are predicted to be *semantically equivalent*:

(24) a. Fred doesn't like that Marie was hired yesterday.

b. Fred NEG like that [Marie was ⟨NEG⟩ hired yesterday]

c. Fred likes that Marie was not hired yesterday.

But his is plainly wrong: (24-a) is not equivalent to (24-c) on any reading. The problem at a theoretical level is that these predicates presuppose the truth of their complement. That is, (24-a) suggests that Marie was hired yesterday. However, if negation is in the embedded clause for the purposes of semantic interpretation, we would expect the presupposition of (24-a) to include that negation: i.e. to presuppose the opposite of what it appears to presuppose, i.e. to presuppose that Marie was *not* hired yesterday.

7 Arguments for the syntactic approach also come from cases that appear to be island effects. See Collins & Postal 2014, 2017 for further discussion; for some arguments against the syntactic approach see Romoli 2013 and Zeijlstra 2017.

A syntactic approach to neg-raising thus cannot be extended to account for the behavior of 'like'-verbs. Defenders of the syntactic approach can, of course, maintain that, superficial similarities aside, the behavior of negated 'like'-verbs should not be assimilated to neg-raising. We cannot say anything to rule out this option definitively. A unified approach should, however, be prefered if possible. And as we will see presently, a semantic approach to neg-raising, coupled with the Gajewski-Chierchia theory of strong NPIs, provides just such an option.

9 Semantic neg-raising

The semantic approach to neg-raising treats it as arising from an excluded middle inference of neg-raising predicates. This inference can be derived either as a presupposition (Bartsch 1973, Heim 2000, Gajewski 2005, 2007, Homer 2015) or scalar implicature (Romoli 2013, Bervoets 2014).[8] The idea is that a sentence like 'James thinks that Marie will be hired', schematized as $\ulcorner \mathbf{think}_j(p) \urcorner$, gives rise to the excluded middle, or opinionatedness, inference (presupposition/implicature) in $\ulcorner \mathbf{think}_j(p) \vee \mathbf{think}_j(\neg p) \urcorner$ (which we can paraphrase as 'James has an opinion as to whether Marie will be hired').

The positive case is not particularly interesting, because the excluded middle is entailed by the assertion However, when we negate the case above, and assume that the negation is interpreted *in situ* above the attitude verb, then, under the assumption that this excluded middle inference projects through negation, from $\ulcorner \neg \mathbf{think}_j \urcorner$ and $\ulcorner \mathbf{think}_j(p) \vee \mathbf{think}_j(\neg p) \urcorner$ we can conclude $\ulcorner \mathbf{think}_j(\neg p) \urcorner$. On both presuppositional and implicature approaches, the excluded middle inference will project through negation as a default, but can also fail to project, accounting for the availability of non-neg-raising readings (agnostic readings).

If we couple this approach with the Gajewski-Chierchia theory of strong NPIs (as

8 Another recent proposal treats neg-raising as arising from Homogeneity, we will not discuss this approach here, see Križ 2015 for discussion.

Romoli (2013) suggests), this approach predicts that strong NPIs are licensed under most neg-raised predicates, but not under 'like'-verbs, for the reasons we have already seen.[9]

The semantic approach to neg-raising can be extended to 'like'-verbs, but requires some tweaks. This has to do with the presuppositional nature of 'like'-verbs (we'll focus on 'like', but everything we say here generalizes). Suppose that 'like' licenses an excluded middle inference of the kind semantic approaches posit for neg-raising predicates. Then, schematically, $\ulcorner \textbf{likes}_f(p) \urcorner$ will license the inference to $\ulcorner \textbf{likes}_f(p) \vee \textbf{likes}_f(\neg p) \urcorner$. The problem is that, as we have seen, 'likes' presupposes the truth of its complement. On standard theories of presupposition projection, (24-b) will then presuppose $\ulcorner p \wedge \neg p \urcorner$, leading to incoherence.[10] In other words, the excluded middle inference which is meant to do the heavy lifting in semantic theories of neg-raising actually looks like it will be incoherent when the predicate in question presupposes its complement.

There are, however, ways around this problem. One way is to assume that the excluded middle inference of (23) should not be formulated as above, but as (25):

(25) $\textbf{likes}_f(p) \vee \textbf{dislikes}_f(p)$

It is easy to see that once we combine $\ulcorner \neg \textbf{likes}_f(p) \urcorner$ with (25), we correctly predicted the neg-raising inference $\ulcorner \textbf{dislike}_f(p) \urcorner$, without any problematic incoherent presuppositions. In other words, on its most prominent reading, 'Fred doesn't like that Marie was hired yesterday' will be interpreted like 'Fred dislikes that Marie was hired yesterday.'

One challenge for this approach, however, is what to do for verbs which do not

9 Note that adding an excluded middle inference does *not* block downward monotonicity properties, since $\ulcorner \textbf{think}_j(p) \wedge (\textbf{think}_j(p) \vee \textbf{think}_j(\neg p)) \urcorner$ entails $\ulcorner \textbf{think}_j(p \wedge q) \wedge (\textbf{think}_j(p \wedge q) \vee \textbf{think}_j(\neg(p \wedge q))) \urcorner$, assuming a standard quantificational semantics for 'think'.

10 There is some controversy about how presuppositions project out of disjunction. On one approach (e.g. Geurts 1999), a disjunction presupposes everything which either disjunct presupposes; then obviously $\ulcorner \textbf{likes}_f(p) \vee \textbf{likes}_f(\neg p) \urcorner$ will presuppose $\ulcorner p \wedge \neg p \urcorner$. On a different approach (e.g. Groenendijk et al. 1996), a disjunction $\ulcorner p \vee q \urcorner$ presupposes the presuppositions of p, together with $\ulcorner \neg p \supset r \urcorner$, where r is the conjunction of the presuppositions of q. On this approach, $\ulcorner \textbf{likes}_f(p) \vee \textbf{likes}_f(\neg p) \urcorner$ presupposes $\ulcorner p \wedge (\neg \textbf{likes}_f(p) \supset \neg p) \urcorner$. Together with the asserted content of $\ulcorner \neg \textbf{likes}_f(p) \urcorner$, this will again entail $\ulcorner p \wedge \neg p \urcorner$.

lexicalize a negative version – including other factive neg-raisers, like 'appreciate', as well as non-factive neg-raisers like 'want' or 'think'. One possibility is to entertain cognitively accessible negative variants of each of these verbs even if these are not actually lexicalised in a given language. A second challenge is that it is not clear how to derive these alternatives in a principled way. These challenges require further exploration. It seems to us, however, that some version of this approach is promising, and can make sense of the neg-raising readings and NPI properties of 'like'-verbs in a unified way.

Finally, notice that this approach readily generalises in principle to the cases with nominal complement mentioned above in (14), thereby providing a unified account of classical neg-raising cases and 'like'-verbs, with sentential or nominal complements.

10 Conclusion

The Gajewski-Chierchia theory of strong NPI licensing predicts that, while neg-raising predicates will typically license strong NPIs, there could be exceptions to this rule, if the negated predicate has implicatures or presuppositions which block downward monotonicity in its scope. 'Like'-verbs have exactly this property, and, as predicted, do not license strong NPIs. This is a striking fact which we believe provides support for the Gajewski-Chierchia theory.

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